ELSEVIER

Forensic Science International 152 (2005) V–VII

Forensic Science International

www.elsevier.com/locate/forsciint

# Volume contents

## Volume 152 (2005)

*Regular articles*

Multiplex mRNA profiling for the identification of body fluids
J. Juusola and J. Ballantyne (USA) ..... 1–12

Optimization and validation of a fully automated silica-coated magnetic beads purification technology in forensics
M. Nagy, P. Otremba, C. Krüger, S. Bergner-Greiner, P. Anders, B. Henske, M. Prinz and L. Roewer (Germany, USA) ..... 13–22

Characterization of the polymorphic repeat sequence within the rDNA IGS of *Cannabis sativa*
H.-M. Hsieh, C.-L. Liu, L.-C. Tsai, R.-J. Hou, K.-L. Liu, A. Linacre and J.C.-I. Lee (Taiwan, UK) ..... 23–28

5-(4-Nitrophenyl)-2,4-pentadien-1-al (NPPD) used as a tracer by nonscientists at a simulated crime scene
S. Suzuki, H. Ohta, Y. Suzuki, R. Sugita, M. Kasamatsu, M. Mori and H. Nakajima (Japan) ..... 29–34

mtDNA HVI length heteroplasmic profile in different tissues of maternally related members
C. Bini and G. Pappalardo (Italy) ..... 35–38

Estimation of the age of human bloodstains by electron paramagnetic resonance spectroscopy: Long-term controlled experiment on the effects of environmental factors
Y. Fujita, K. Tsuchiya, S. Abe, Y. Takiguchi, S.-i. Kubo and H. Sakurai (Japan) ..... 39–43

Inferring the population of origin of DNA evidence within the UK by allele-specific hybridization of Y-SNPs
J.H. Wetton, K.W. Tsang and H. Khan (UK) ..... 45–53

A typology of mass grave and mass grave-related sites
E. Jessee and M. Skinner (Canada) ..... 55–59

Homicide by ligature strangulation in Finland: Offence and offender characteristics
H. Häkkänen (Finland) ..... 61–64

Fatal steamer accident; blunt force injuries and drowning in post-mortem MSCT and MRI
E. Aghayev, M.J. Thali, M. Sonnenschein, J. Hurlimann, C. Jackowski, T. Kilchoer and R. Dirnhofer (Switzerland) ..... 65–71

The prevalence of MDMA/MDA in both hair and urine in drug users
E. Han, W. Yang, J. Lee, Y. Park, E. Kim, M. Lim and H. Chung (South Korea) ..... 73–77

*Announcement of population datas*

Autosomic STR population data in two Caribbean samples from Colombia
B. Martínez, L. Caraballo, L. Gusmão, A. Amorim and A. Carracedo (Colombia, Portugal, Spain) ..... 79–81

Population data for 12 Y-chromosome STRs in a sample from Brescia (northern Italy)
N. Cerri, A. Verzeletti, B. Bandera and F. De Ferrari (Italy) ..... 83–87

Y-chromosomal STR haplotypes in a Belgian population sample and identification of a micro-variant with a flanking site mutation at DYS19
K. De Maesschalck, E. Vanhoutte, K. Knaepen, N. Vanderheyden, J.-J. Cassiman and R. Decorte (Belgium) ..... 89–94

Y-chromosomal STR haplotypes in three ethnic groups and one cosmopolitan population from Tunisia
L. Cherni, L. Pereira, A. Goios, B.Y. Loueslati, H.K. el Khil, I. Gomes, L. Gusmão, C. Alves, A. Slama, A. Amorim and A.B. Elgaaied (Tunisia, Portugal) ..... 95–99

doi:10.1016/S0379-0738(05)00356-7

Dairy of future events ..... I–IV

*Regular papers*

Facial soft tissue thickness in Japanese female children
H. Utsuno, T. Kageyama, T. Deguchi, M. Yoshino, H. Miyazawa and K. Inoue (Japan) ..... 101–107

Identification of DNA of human origin based on amplification of human-specific mitochondrial cytochrome *b* region
H. Matsuda, Y. Seo, E. Kakizaki, S. Kozawa, E. Muraoka and N. Yukawa (Japan) ..... 109–114

Relatedness and DNA: are we taking it seriously enough?
J. Buckleton and C.M. Triggs (New Zealand) ..... 115–119

A molecular identification system for grasses: a novel technology for forensic botany
J. Ward, R. Peakall, S.R. Gilmore and J. Robertson (Australia) ..... 121–131

Forensic evaluation and haplotypes of 19 Y-chromosomal STR loci in Koreans
M.J. Park, H.Y. Lee, J.-E. Yoo, U. Chung, S.Y. Lee and K.-J. Shin (Republic of Korea) ..... 133–147

Driving under the influence of drugs — evaluation of analytical data of drugs in oral fluid, serum and urine, and correlation with impairment symptoms
S.W. Toennes, G.F. Kauert, S. Steinmeyer and M.R. Moeller (Germany) ..... 149–155

Some pyridine derivatives as "route-specific markers" in 4-methoxyamphetamine (PMA) prepared by the Leuckart method. Studies on the role of the aminating agent in their distribution in the final product
D. Błachut, K. Wojtasiewicz and Z. Czarnocki (Poland) ..... 157–173

Determination of synthesis method of ecstasy based on the basic impurities
M. Świst, J. Wilamowski and A. Parczewski (Poland) ..... 175–184

Chemical characterization of counterfeit captagon tablets seized in Jordan
M.A. Alabdalla (Jordan) ..... 185–188

Raman spectroscopy and the forensic analysis of black/grey and blue cotton fibres. Part 1. Investigation of the effects of varying laser wavelength
J. Thomas, P. Buzzini, G. Massonnet, B. Reedy and C. Roux (Australia, Switzerland) ..... 189–197

Rapid and simple method for direct determination of several amphetamines in seized tablets by GC–FID
B. Mitrevski and Z. Zdravkovski (Macedonia) ..... 199–203

Determination of the hand from single digit fingerprint: a study of whorls
I. Singh, P.K. Chattopadhyay and R.K. Garg (India) ..... 205–208

Forensic interpretation of Y-chromosomal DNA mixtures
A. Wolf, A. Caliebe, O. Junge and M. Krawczak (Germany) ..... 209–213

Mass spectra and time-resolved fluorescence spectroscopy of the reaction product of glycine with 1,2-indanedione in methanol
I.M. Alaoui, E.R. Menzel, M. Farag, K.H. Cheng and R.H. Murdock (Morocco, USA) ..... 215–219

Survey of crowbar and household paints in burglary cases—population studies, transfer and interpretation
P. Buzzini, G. Massonnet, S. Birrer, N.M. Egli, W. Mazzella and A. Fortini (Switzerland) ..... 221–234

Qualitative and quantitative analysis of seized street drug samples and identification of source
S.P. Sharma, B.C. Purkait and S.C. Lahiri (India) ..... 235–240

Raman spectroscopy of blue gel pen inks
W.D. Mazzella and P. Buzzini (Switzerland) ..... 241–247

Fluorescence optimisation and lifetime studies of fingerprints treated with magnetic powders
L.K. Seah, U.S. Dinish, W.F. Phang, Z.X. Chao and V.M. Murukeshan (Singapore) ..... 249–257

*Announcement of population data*

Allelic frequencies of 13 STR loci in autochthonous Basques from the province of Vizcaya (Spain)
A.M. Pérez-Miranda, M.A. Alfonso-Sánchez, A. Kalantar, J.A. Peña, M.M. de Pancorbo and R.J. Herrera (USA, Spain, United Arab Emirates) ..... 259–262

Genetic profile of 15 STR loci in the Min Nan population in Southeast China
S.P. Hu, D.Q. Wu, X.H. Xu, J.W. Liu and B. Li (PR China) ..... 263–265

STR population diversity in nine ethnic populations living in Dubai
F. Alshamali, A.Q. Alkhayat, B. Budowle and N.D. Watson (UAE, USA, UK) ..... 267–279

Allele frequencies of 19 STR loci in a Philippine population generated using AmpFlSTR multiplex and ALF singleplex systems
M.C.A. De Ungria, R.K. Roby, K.A. Tabbada, S. Rao-Coticone, M.M.M. Tan and K.N. Hernandez (Philippines, USA, Spain) ..... 281–284

Genetic data for the 13 CODIS STR loci in Singapore Chinese
C.K.C. Syn, S.Y. Chuah, H.C. Ang, S.E.S. Lim, W.F. Tan-Siew, S.T. Chow and B. Budowle (Singapore, USA) 285–288
Y chromosome STR haplotypes in three UK populations
D.J. Ballard, C. Phillips, C.R. Thacker, C. Robson, A.P. Revoir and D. Syndercombe Court (UK) ..... 289–305
Population data for the Identifier™ 15 STR loci in Hong Kong Chinese
K.M. Chan, C.T. Chiu, P. Tsui, D.M. Wong and W.K. Fung (China) ..... 307–309

*Review article*
The place of a forensic archaeologist at a crime scene involving a buried body
L.L. Menez (UK) ..... 311–315

*Book reviews*
Statistics and the Evaluation of Evidence for Forensic Scientists
J. Wiley and J. Buckleton (USA, New Zealand) ..... 317
Weight-of-Evidence for Forensic DNA Profiles
P. Gill and J. Buckleton (UK, New Zealand) ..... 319

*Letters to the editor*
Power of excluding an elder brother of a child from paternity
Y.-Q Hu, W.K. Fung and Y.Q. Hu (China) ..... 321–322
Driving impairment on buprenorphine and slow-release oral morphine in drug-dependent patients
S. Giacomuzzi, Y. Riemer, W. Haaser and L. Pilsz (Austria) ..... 323–324

Dairy of future events ..... I–III
Volume contents ..... V–VII
Author index ..... IX–X
Subject index ..... XI–XVI

ELSEVIER

Forensic Science International 152 (2005) IX–X

Forensic Science International

www.elsevier.com/locate/forsciint

# Author index

## Volume 152 (2005)

Abe, S. **152**, 39
Aghayev, E. **152**, 65
Alabdalla, M.A. **152**, 185
Alaoui, I.M. **152**, 215
Alfonso-Sánchez, M.A. **152**, 259
Alkhayat, A.Q. **152**, 267
Alshamali, F. **152**, 267
Alves, C. **152**, 95
Amorim, A. **152**, 79, 95
Anders, P. **152**, 13
Ang, H.C. **152**, 285

Ballantyne, J. **152**, 1
Ballard, D.J. **152**, 289
Bandera, B. **152**, 83
Bergner-Greiner, S. **152**, 13
Bini, C. **152**, 35
Birrer, S. **152**, 221
Błachut, D. **152**, 157
Buckleton, J. **152**, 115, 317, 319
Budowle, B. **152**, 267, 285
Buzzini, P. **152**, 189, 221, 241

Caliebe, A. **152**, 209
Caraballo, L. **152**, 79
Carracedo, A. **152**, 79
Cassiman, J.-J. **152**, 89
Cerri, N. **152**, 83
Chan, K.M. **152**, 307
Chao, Z.X. **152**, 249
Chattopadhyay, P.K. **152**, 205
Cheng, K.H. **152**, 215
Cherni, L. **152**, 95
Chiu, C.T. **152**, 307
Chow, S.T. **152**, 285
Chuah, S.Y. **152**, 285
Chung, H. **152**, 73
Chung, U. **152**, 133
Czarnocki, Z. **152**, 157

De Ferrari, F. **152**, 83
De Maesschalck, K. **152**, 89
De Ungria, M.C.A. **152**, 281
Decorte, R. **152**, 89
Deguchi, T. **152**, 101
de Pancorbo, M.M. **152**, 259
Dinish, U.S. **152**, 249
Dirnhofer, R. **152**, 65

Egli, N.M. **152**, 221
Elgaaied, A.B. **152**, 95

Farag, M. **152**, 215
Fortini, A. **152**, 221
Fujita, Y. **152**, 39
Fung, W.K. **152**, 307, 321

Garg, R.K. **152**, 205
Giacomuzzi, S. **152**, 323
Gill, P. **152**, 319
Gilmore, S.R. **152**, 121
Goios, A. **152**, 95
Gomes, I. **152**, 95
Gusmão, L. **152**, 79, 95

Haaser, W. **152**, 323
Häkkänen, H. **152**, 61
Han, E. **152**, 73
Henske, B. **152**, 13
Hernandez, K.N. **152**, 281
Herrera, R.J. **152**, 259
Hou, R.-J. **152**, 23
Hsieh, H.-M. **152**, 23
Hu, S.P. **152**, 263
Hu, Y.-Q. **152**, 321
Hurlimann, J. **152**, 65

Inoue, K. **152**, 101

Jackowski, C. **152**, 65
Jessee, E. **152**, 55
Junge, O. **152**, 209
Juusola, J. **152**, 1

Kageyama, T. **152**, 101
Kakizaki, E. **152**, 109
Kalantar, A. **152**, 259
Kasamatsu, M. **152**, 29
Kauert, G.F. **152**, 149
Khan, H. **152**, 45
Khil, H.K.e. **152**, 95
Kilchoer, T. **152**, 65
Kim, E. **152**, 73
Knaepen, K. **152**, 89
Kozawa, S. **152**, 109
Krawczak, M. **152**, 209
Krüger, C. **152**, 13
Kubo, S.-i. **152**, 39

Lahiri, S.C. **152**, 235
Lee, H.Y. **152**, 133
Lee, J.C.-I. **152**, 23
Lee, J. **152**, 73
Lee, S.Y. **152**, 133
Li, B. **152**, 263
Lim, M. **152**, 73
Lim, S.E.S. **152**, 285
Linacre, A. **152**, 23
Liu, C.-L. **152**, 23
Liu, J.W. **152**, 263
Liu, K.-L. **152**, 23
Loueslati, B.Y. **152**, 95

Martínez, B. **152**, 79
Massonnet, G. **152**, 189, 221
Matsuda, H. **152**, 109
Mazzella, W.D. **152**, 241
Mazzella, W. **152**, 221
Menez, L.L. **152**, 311
Menzel, E.R. **152**, 215
Mitrevski, B. **152**, 199
Miyazawa, H. **152**, 101
Moeller, M.R. **152**, 149
Mori, M. **152**, 29
Muraoka, E. **152**, 109
Murdock, R.H. **152**, 215
Murukeshan, V.M. **152**, 249

doi:10.1016/S0379-0738(05)00357-9

Nagy, M. **152**, 13
Nakajima, H. **152**, 29

Ohta, H. **152**, 29
Otremba, P. **152**, 13

Pappalardo, G. **152**, 35
Parczewski, A. **152**, 175
Park, M.J. **152**, 133
Park, Y. **152**, 73
Peakall, R. **152**, 121
Peña, J.A. **152**, 259
Pereira, L. **152**, 95
Pérez-Miranda, A.M. **152**, 259
Phang, W.F. **152**, 249
Phillips, C. **152**, 289
Pilsz, L. **152**, 323
Prinz, M. **152**, 13
Purkait, B.C. **152**, 235

Rao-Coticone, S. **152**, 281
Reedy, B. **152**, 189
Revoir, A.P. **152**, 289
Riemer, Y. **152**, 323
Robertson, J. **152**, 121
Robson, C. **152**, 289
Roby, R.K. **152**, 281
Roewer, L. **152**, 13
Roux, C. **152**, 189

Sakurai, H. **152**, 39
Seah, L.K. **152**, 249
Seo, Y. **152**, 109
Sharma, S.P. **152**, 235
Shin, K.-J. **152**, 133
Singh, I. **152**, 205
Skinner, M. **152**, 55
Slama, A. **152**, 95
Sonnenschein, M. **152**, 65
Steinmeyer, S. **152**, 149
Sugita, R. **152**, 29
Suzuki, S. **152**, 29
Suzuki, Y. **152**, 29
Świst, M. **152**, 175
Syn, C.K.C. **152**, 285
Syndercombe Court, D. **152**, 289

Tabbada, K.A. **152**, 281
Takiguchi, Y. **152**, 39
Tan, M.M.M. **152**, 281
Tan-Siew, W.F. **152**, 285
Thacker, C.R. **152**, 289
Thali, M.J. **152**, 65
Thomas, J. **152**, 189
Toennes, S.W. **152**, 149
Triggs, C.M. **152**, 115
Tsai, L.-C. **152**, 23
Tsang, K.W. **152**, 45
Tsuchiya, K. **152**, 39
Tsui, P. **152**, 307

Utsuno, H. **152**, 101

Vanderheyden, N. **152**, 89
Vanhoutte, E. **152**, 89
Verzeletti, A. **152**, 83

Ward, J. **152**, 121
Watson, N.D. **152**, 267
Wetton, J.H. **152**, 45
Wilamowski, J. **152**, 175
Wiley, J. **152**, 317
Wojtasiewicz, K. **152**, 157
Wolf, A. **152**, 209
Wong, D.M. **152**, 307
Wu, D.Q. **152**, 263

Xu, X.H. **152**, 263

Yang, W. **152**, 73
Yoo, J.-E. **152**, 133
Yoshino, M. **152**, 101
Yukawa, N. **152**, 109

Zdravkovski, Z. **152**, 199

ELSEVIER

Forensic Science International 152 (2005) XI–XVI

Forensic Science International

www.elsevier.com/locate/forsciint

# Subject index

## Volume 152 (2005)

**Acetyl codeine**; Heroin, Morphine, Acetyl morphine, GC–MS, HPTLC, Isotopic substitution, Source **152**, 235

**Acetyl morphine**; Heroin, Morphine, Acetyl codeine, GC–MS, HPTLC, Isotopic substitution, Source **152**, 235

**Admixture**; Ethnic appearance, Biogeographic ancestry, Y-SNP **152**, 45

**ALFexpress**; Philippines, Identifiler, Multiplex, Singleplex, D8S1179 **152**, 281

**Allele frequencies**; Polymerase chain reaction (PCR), Short tandem repeats (STRs), Chinese, Identifier™ PCR amplification kit **152**, 307

**Allele frequency**; Short tandem repeat (STR), Min Nan Chinese population data, AmpFLSTR identifiler **152**, 263

**Allelic frequencies**; Short tandem repeats, AmpF/STR Profiler Plus, AmpF/STR Cofiler, CODIS, Basque Country **152**, 259

**AmpF/STR Profiler**; STRs, Population data, Colombian Caribbean coast **152**, 79

**AmpF/**STR® Profiler Plus™; Short tandem repeat (STR), Chinese allele frequencies, Singapore population data, AmpF/STR®Cofiler™ **152**, 285

**AmpF/**STR®Cofiler™; Short tandem repeat (STR), Chinese allele frequencies, Singapore population data, AmpF/STR® Profiler Plus™ **152**, 285

**AmpF/**STR Cofiler; Short tandem repeats, Allelic frequencies, AmpF/STR Profiler Plus, CODIS, Basque Country **152**, 259

**AmpF/**STR Profiler Plus; Short tandem repeats, Allelic frequencies, AmpF/STR Cofiler, CODIS, Basque Country **152**, 259

**AmpFLSTR identifiler**; Short tandem repeat (STR), Min Nan Chinese population data, Allele frequency **152**, 263

**Amphetamines**; Separation, Peak asymmetry, GC–FID **152**, 199

**"Andalusians"**; Y-chromosome, Short tandem repeats, Tunisia, Berbers, Arabs **152**, 95

**Arabs**; Y-chromosome, Short tandem repeats, Tunisia, Berbers, "Andalusians" **152**, 95

**Automated extraction**; DNA extraction, Short tandem repeat analysis, Real time PCR, Forensic DNA **152**, 13

**Basque Country**; Short tandem repeats, Allelic frequencies, AmpF/STR Profiler Plus, AmpF/STR Cofiler, CODIS **152**, 259

**Berbers**; Y-chromosome, Short tandem repeats, Tunisia, Arabs, "Andalusians" **152**, 95

**Biogeographic ancestry**; Ethnic appearance, Admixture, Y-SNP **152**, 45

**Blood identification**; RNA, mRNA profiling, Body fluid identification, Saliva identification, Semen identification, Vaginal secretions identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Bloodstain age**; Electron paramagnetic resonance (EPR), Bloodstain, Hemoglobin, Temperature, Sunlight **152**, 39

**Bloodstain**; Electron paramagnetic resonance (EPR), Bloodstain age, Hemoglobin, Temperature, Sunlight **152**, 39

**Blue cotton**; Forensic fibre analysis, Raman spectroscopy, Reactive dye, Fluorescence, Degradation, Laser wavelength **152**, 189

**Body fluid identification**; RNA, mRNA profiling, Blood identification, Saliva identification, Semen identification, Vaginal secretions identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Burials**; Forensic archaeology, Crime scene investigations, Exhumations, Forensic anthropology **152**, 311

doi:10.1016/S0379-0738(05)00358-0

***Cannabis sativa***; rDNA IGS, Repeat sequence, Polymorphism **152**, 23

**Captagon**; Counterfeit, GC–MS, Tablets **152**, 185

**Chinese allele frequencies**; Short tandem repeat (STR), Singapore population data, AmpF*/*STR® Profiler Plus™, AmpF*/*STR®Cofiler™ **152**, 285

**Chinese**; Polymerase chain reaction (PCR), Short tandem repeats (STRs), Allele frequencies, Identifier™ PCR amplification kit **152**, 307

**CODIS**; Short tandem repeats, Allelic frequencies, AmpF/STR Profiler Plus, AmpF/STR Cofiler, Basque Country **152**, 259

**Colombian Caribbean coast**; STRs, Population data, AmpF(STR Profiler **152**, 79

**Computed tomography**; Virtopsy, Forensic radiology, Magnetic resonance imaging, Steamer accident, Rupture of aorta **152**, 65

**Counterfeit**; Captagon, GC–MS, Tablets **152**, 185

**Crime scene investigations**; Forensic archaeology, Burials, Exhumations, Forensic anthropology **152**, 311

**Cross transfer**; Paint, Population studies, Simulated contacts, Paint transfer, Interpretation **152**, 221

**C-stretch**; Mitochondrial DNA, Sequencing, Length heteroplasmy **152**, 35

**Cytochrome *b* gene**; Human identification, Species determination, Mitochondrial DNA, Forensic casework **152**, 109

**D8S1179**; Philippines, Identifiler, Multiplex, Singleplex, ALFexpress **152**, 281

**Degradation**; Forensic fibre analysis, Raman spectroscopy, Reactive dye, Blue cotton, Fluorescence, Laser wavelength **152**, 189

**Designer drugs**; MDMA, MDA, Hair analysis **152**, 73

**DNA extraction**; Automated extraction, Short tandem repeat analysis, Real time PCR, Forensic DNA **152**, 13

**rDNA IGS**; Repeat sequence, *Cannabis sativa*, Polymorphism **152**, 23

**DNA interpretation**; Relatedness, Match probability **152**, 115

**Document examination**; Inks, Gel pen, Raman spectroscopy **152**, 241

**Driving under the influence**; Saliva/oral fluid, Serum, Urine, Drugs of abuse, Impairment symptoms **152**, 149

**Drugs of abuse**; Saliva/oral fluid, Serum, Urine, Driving under the influence, Impairment symptoms **152**, 149

**DYS388**; 19 Y-STRs, Minimal haplotype loci, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS434**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS435**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS436**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS437**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS438**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS439**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS446**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS449**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**DYS464**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, Gene diversity, Haplotype, Koreans **152**, 133

**Electron paramagnetic resonance (EPR)**; Bloodstain, Bloodstain age, Hemoglobin, Temperature, Sunlight **152**, 39

**Ethnic appearance**; Biogeographic ancestry, Admixture, Y-SNP **152**, 45

**Exhumations**; Forensic archaeology, Burials, Crime scene investigations, Forensic anthropology **152**, 311

**Facial reconstruction**; Forensic anthropology, Facial soft tissue thickness, Skull and photo superimposition **152**, 101

**Facial soft tissue thickness**; Forensic anthropology, Facial reconstruction, Skull and photo superimposition **152**, 101

**Fingerprint**; 1,2-Indanedione, Fluorescence, Lifetime, Mass spectroscopy **152**, 215

**Fingers**; Glove, NPPD **152**, 29

**Fluorescence lifetime**; Latent fingerprint, Optimisation, Time-resolved method **152**, 249

**Fluorescence**; 1,2-Indanedione, Fingerprint, Lifetime, Mass spectroscopy **152**, 215

**Fluorescence**; Forensic fibre analysis, Raman spectroscopy, Reactive dye, Blue cotton, Degradation, Laser wavelength **152**, 189

**Forensic anthropology**; Facial reconstruction, Facial soft tissue thickness, Skull and photo superimposition **152**, 101

**Forensic anthropology**; Forensic archaeology, Burials, Crime scene investigations, Exhumations **152**, 311

**Forensic archaeology**; Burials, Crime scene investigations, Exhumations, Forensic anthropology **152**, 311

**Forensic bioarchaeology**; Mass grave, Mass grave-related site, Standardized nomenclature **152**, 55

**Forensic botany**; Grasses, Molecular identification system, Indels, PCR assay, Mitochondrial genome **152**, 121

**Forensic casework**; Human identification, Species determination, Mitochondrial DNA, Cytochrome *b* gene **152**, 109

**Forensic DNA**; DNA extraction, Automated extraction, Short tandem repeat analysis, Real time PCR **152**, 13

**Forensic fibre analysis**; Raman spectroscopy, Reactive dye, Blue cotton, Fluorescence, Degradation, Laser wavelength **152**, 189

**Forensic radiology**; Virtopsy, Computed tomography, Magnetic resonance imaging, Steamer accident, Rupture of aorta **152**, 65

**Gas chromatography–mass spectrometry**; Heterocyclic impurities, Route-specific markers, Structure elucidation, Suzuki cross-coupling **152**, 157

**GC–FID**; Amphetamines, Separation, Peak asymmetry **152**, 199

**GC–MS**; Counterfeit, Captagon, Tablets **152**, 185

**GC–MS**; Heroin, Morphine, Acetyl morphine, Acetyl codeine, HPTLC, Isotopic substitution, Source **152**, 235

**Gel pen**; Document examination, Inks, Raman spectroscopy **152**, 241

**Gender**; Homicide, Ligature strangulation, Motive, Relationship **152**, 61

**Gene diversity**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Haplotype, Koreans **152**, 133

**Glove**; Fingers, NPPD **152**, 29

**Grasses**; Molecular identification system, Forensic botany, Indels, PCR assay, Mitochondrial genome **152**, 121

**Hair analysis**; Designer drugs, MDMA, MDA **152**, 73

**Haplotype**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Koreans **152**, 133

**Haplotype**; Likelihood ratio, Y-chromosome, Trace, Population database **152**, 209

**Haplotypes**; Y chromosome, STR polymorphisms, UK populations **152**, 289

**Hemoglobin**; Electron paramagnetic resonance (EPR), Bloodstain, Bloodstain age, Temperature, Sunlight **152**, 39

**Heroin**; Morphine, Acetyl morphine, Acetyl codeine, GC–MS, HPTLC, Isotopic substitution, Source **152**, 235

**Heterocyclic impurities**; Route-specific markers, Gas chromatography–mass spectrometry, Structure elucidation, Suzuki cross- coupling **152**, 157

**Homicide**; Ligature strangulation, Motive, Gender, Relationship **152**, 61

**HPTLC**; Heroin, Morphine, Acetyl morphine, Acetyl codeine, GC–MS, Isotopic substitution, Source **152**, 235

**Human identification**; Species determination, Mitochondrial DNA, Cytochrome *b* gene, Forensic casework **152**, 109

**Identification**; Side determination, Ridges, Whorls **152**, 205

**Identifiler™ PCR amplification kit**; Polymerase chain reaction (PCR), Short tandem repeats (STRs), Chinese, Allele frequencies **152**, 307

**Identifiler**; Philippines, Multiplex, Singleplex, ALFexpress, D8S1179 **152**, 281

**Impairment symptoms**; Saliva/oral fluid, Serum, Urine, Driving under the influence, Drugs of abuse **152**, 149

**1,2-Indanedione**; Fingerprint, Fluorescence, Lifetime, Mass spectroscopy **152**, 215

**Indels**; Grasses, Molecular identification system, Forensic botany, PCR assay, Mitochondrial genome **152**, 121

**Inks**; Document examination, Gel pen, Raman spectroscopy **152**, 241

**Interpretation**; Paint, Population studies, Simulated contacts, Paint transfer, Cross transfer **152**, 221

**Isotopic substitution**; Heroin, Morphine, Acetyl morphine, Acetyl codeine, GC–MS, HPTLC, Source **152**, 235

**Italy**; Y-chromosome, STR, Population data **152**, 83

**Koreans**; 19 Y-STRs, Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype **152**, 133

**Laser wavelength**; Forensic fibre analysis, Raman spectroscopy, Reactive dye, Blue cotton, Fluorescence, Degradation **152**, 189

**Latent fingerprint**; Fluorescence lifetime, Optimisation, Time-resolved method **152**, 249

**Length heteroplasmy**; Mitochondrial DNA, Sequencing, C-stretch **152**, 35

**Leuckart method**; MDMA, Reductive amination, Safrole bromination, Route specific impurities **152**, 175

**Lifetime**; 1,2-Indanedione, Fingerprint, Fluorescence, Mass spectroscopy **152**, 215

**Ligature strangulation**; Homicide, Motive, Gender, Relationship **152**, 61

**Likelihood ratio**; Y-chromosome, Haplotype, Trace, Population database **152**, 209

**Magnetic resonance imaging**; Virtopsy, Forensic radiology, Computed tomography, Steamer accident, Rupture of aorta **152**, 65

**Mass grave**; Mass grave-related site, Standardized nomenclature, Forensic bioarchaeology **152**, 55

**Mass grave-related site**; Mass grave, Standardized nomenclature, Forensic bioarchaeology **152**, 55

**Mass spectroscopy**; 1,2-Indanedione, Fingerprint, Fluorescence, Lifetime **152**, 215

**Match probability**; DNA interpretation, Relatedness **152**, 115

**MDA**; Designer drugs, MDMA, Hair analysis **152**, 73

**MDMA**; Designer drugs, MDA, Hair analysis **152**, 73

**MDMA**; Reductive amination, Leuckart method, Safrole bromination, Route specific impurities **152**, 175

**Menstrual blood identification**; RNA, mRNA profiling, Body fluid identification, Blood identification, Saliva identification, Semen identification, Vaginal secretions identification, Multiplex RT-PCR **152**, 1

**Min Nan Chinese population data**; Short tandem repeat (STR), Allele frequency, AmpFLSTR identifiler **152**, 263

**Minimal haplotype loci**; 19 Y-STRs, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133

**Mitochondrial DNA**; Human identification, Species determination, Cytochrome *b* gene, Forensic casework **152**, 109

**Mitochondrial DNA**; Sequencing, Length heteroplasmy, C-stretch **152**, 35

**Mitochondrial genome**; Grasses, Molecular identification system, Forensic botany, Indels, PCR assay **152**, 121

**Molecular identification system**; Grasses, Forensic botany, Indels, PCR assay, Mitochondrial genome **152**, 121

**Morphine**; Heroin, Acetyl morphine, Acetyl codeine, GC–MS, HPTLC, Isotopic substitution, Source **152**, 235

**Motive**; Homicide, Ligature strangulation, Gender, Relationship **152**, 61

**mRNA profiling**; RNA, Body fluid identification, Blood identification, Saliva identification, Semen identification, Vaginal secretions identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Multiplex RT-PCR**; RNA, mRNA profiling, Body fluid identification, Blood identification, Saliva identification, Semen identification, Vaginal secretions identification, Menstrual blood identification **152**, 1

**Multiplex**; Philippines, Identifiler, Singleplex, ALFexpress, D8S1179 **152**, 281

**NPPD**; Fingers, Glove **152**, 29

**Optimisation**; Latent fingerprint, Fluorescence lifetime, Time-resolved method **152**, 249

**Paint transfer**; Paint, Population studies, Simulated contacts, Interpretation, Cross transfer **152**, 221

**Paint**; Population studies, Simulated contacts, Paint transfer, Interpretation, Cross transfer **152**, 221

**PCR assay**; Grasses, Molecular identification system, Forensic botany, Indels, Mitochondrial genome **152**, 121

**Peak asymmetry**; Amphetamines, Separation, GC–FID **152**, 199

**Philippines**; Identifiler, Multiplex, Singleplex, ALFexpress, D8S1179 **152**, 281

**Polymerase chain reaction (PCR)**; Short tandem repeats (STRs), Chinese, Allele frequencies, Identifier™ PCR amplification kit **152**, 307

**Polymorphism**; rDNA IGS, Repeat sequence, *Cannabis sativa* **152**, 23

**Population data**; Powerplex Y, Short tandem repeat, Y-chromosome **152**, 89

**Population data**; STRs, AmpF*ℓ*STR Profiler, Colombian Caribbean coast **152**, 79

**Population data**; Y-chromosome, STR, Italy **152**, 83

**Population database**; Likelihood ratio, Y-chromosome, Haplotype, Trace **152**, 209

**Population studies**; Paint, Simulated contacts, Paint transfer, Interpretation, Cross transfer **152**, 221

**Powerplex Y**; Short tandem repeat, Population data, Y-chromosome **152**, 89

**Raman spectroscopy**; Document examination, Inks, Gel pen **152**, 241

**Raman spectroscopy**; Forensic fibre analysis, Reactive dye, Blue cotton, Fluorescence, Degradation, Laser wavelength **152**, 189

**Reactive dye**; Forensic fibre analysis, Raman spectroscopy, Blue cotton, Fluorescence, Degradation, Laser wavelength **152**, 189

**Real time PCR**; DNA extraction, Automated extraction, Short tandem repeat analysis, Forensic DNA **152**, 13

**Reductive amination**; MDMA, Leuckart method, Safrole bromination, Route specific impurities **152**, 175

**Relatedness**; DNA interpretation, Match probability **152**, 115

**Relationship**; Homicide, Ligature strangulation, Motive, Gender **152**, 61

**Repeat sequence**; rDNA IGS, *Cannabis sativa*, Polymorphism **152**, 23

**Ridges**; Side determination, Whorls, Identification **152**, 205

**RNA**; mRNA profiling, Body fluid identification, Blood identification, Saliva identification, Semen identification, Vaginal secretions identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Route specific impurities**; MDMA, Reductive amination, Leuckart method, Safrole bromination **152**, 175

**Route-specific markers**; Heterocyclic impurities, Gas chromatography–mass spectrometry, Structure elucidation, Suzuki cross-coupling **152**, 157

**Rupture of aorta**; Virtopsy, Forensic radiology, Computed tomography, Magnetic resonance imaging, Steamer accident **152**, 65

**Safrole bromination**; MDMA, Reductive amination, Leuckart method, Route specific impurities **152**, 175

**Saliva identification**; RNA, mRNA profiling, Body fluid identification, Blood identification, Semen identification, Vaginal secretions identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Saliva/oral fluid**; Serum, Urine, Driving under the influence, Drugs of abuse, Impairment symptoms **152**, 149

**Semen identification**; RNA, mRNA profiling, Body fluid identification, Blood identification, Saliva identification, Vaginal secretions identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Separation**; Amphetamines, Peak asymmetry, GC–FID **152**, 199

**Sequencing**; Mitochondrial DNA, Length heteroplasmy, C-stretch **152**, 35

**Serum**; Saliva/oral fluid, Urine, Driving under the influence, Drugs of abuse, Impairment symptoms **152**, 149

**Short tandem repeat (STR)**; Chinese allele frequencies, Singapore population data, AmpF*/*STR® Profiler Plus™, AmpF/STR®Cofiler™ **152**, 285

**Short tandem repeat (STR)**; Min Nan Chinese population data, Allele frequency, AmpFLSTR identifiler **152**, 263

**Short tandem repeat analysis**; DNA extraction, Automated extraction, Real time PCR, Forensic DNA **152**, 13

**Short tandem repeat**; Powerplex Y, Population data, Y-chromosome **152**, 89

**Short tandem repeats (STRs)**; Polymerase chain reaction (PCR), Chinese, Allele frequencies, Identifier™ PCR amplification kit **152**, 307

**Short tandem repeats**; Allelic frequencies, AmpF/STR Profiler Plus, AmpF/STR Cofiler, CODIS, Basque Country **152**, 259

**Short tandem repeats**; Y-chromosome, Tunisia, Berbers, Arabs, "Andalusians" **152**, 95

**Side determination**; Ridges, Whorls, Identification **152**, 205

**Simulated contacts**; Paint, Population studies, Paint transfer, Interpretation, Cross transfer **152**, 221

**Singapore population data**; Short tandem repeat (STR), Chinese allele frequencies, AmpF*/*STR® Profiler Plus™, AmpF/STR®Cofiler™ **152**, 285

**Singleplex**; Philippines, Identifiler, Multiplex, ALFexpress, D8S1179 **152**, 281

**Skull and photo superimposition**; Forensic anthropology, Facial reconstruction, Facial soft tissue thickness **152**, 101

**Source**; Heroin, Morphine, Acetyl morphine, Acetyl codeine, GC–MS, HPTLC, Isotopic substitution **152**, 235

**Species determination**; Human identification, Mitochondrial DNA, Cytochrome *b* gene, Forensic casework **152**, 109

**Standardized nomenclature**; Mass grave, Mass grave-related site, Forensic bioarchaeology **152**, 55

**Steamer accident**; Virtopsy, Forensic radiology, Computed tomography, Magnetic resonance imaging, Rupture of aorta **152**, 65

**STR polymorphisms**; Y chromosome, Haplotypes, UK populations **152**, 289

**STR**; Y-chromosome, Population data, Italy **152**, 83

**STRs**; Population data, AmpF*ℓ*STR Profiler, Colombian Caribbean coast **152**, 79

**Structure elucidation**; Heterocyclic impurities, Route-specific markers, Gas chromatography–mass spectrometry, Suzuki cross-coupling **152**, 157

**Sunlight**; Electron paramagnetic resonance (EPR), Bloodstain, Bloodstain age, Hemoglobin, Temperature **152**, 39

**Suzuki cross-coupling**; Heterocyclic impurities, Route-specific markers, Gas chromatography–mass spectrometry, Structure elucidation **152**, 157

**Tablets**; Counterfeit, Captagon, GC–MS **152**, 185

**Temperature**; Electron paramagnetic resonance (EPR), Bloodstain, Bloodstain age, Hemoglobin, Sunlight **152**, 39

**Time-resolved method**; Latent fingerprint, Fluorescence lifetime, Optimisation **152**, 249

**Trace**; Likelihood ratio, Y-chromosome, Haplotype, Population database **152**, 209

**Traffic medicine 152**, 323

**Tunisia**; Y-chromosome, Short tandem repeats, Berbers, Arabs, "Andalusians" **152**, 95

**UK populations**; Y chromosome, STR polymorphisms, Haplotypes **152**, 289

**Urine**; Saliva/oral fluid, Serum, Driving under the influence, Drugs of abuse, Impairment symptoms **152**, 149

**Vaginal secretions identification**; RNA, mRNA profiling, Body fluid identification, Blood identification, Saliva identification, Semen identification, Menstrual blood identification, Multiplex RT-PCR **152**, 1

**Virtopsy**; Forensic radiology, Computed tomography, Magnetic resonance imaging, Steamer accident, Rupture of aorta **152**, 65

**Whorls**; Side determination, Ridges, Identification **152**, 205

**Y chromosome**; STR polymorphisms, Haplotypes, UK populations **152**, 289

**Y-chromosome**; Likelihood ratio, Haplotype, Trace, Population database **152**, 209

**Y-chromosome**; Powerplex Y, Short tandem repeat, Population data **152**, 89

**Y-chromosome**; Short tandem repeats, Tunisia, Berbers, Arabs, "Andalusians" **152**, 95

**Y-chromosome**; STR, Population data, Italy **152**, 83

**Y-SNP**; Ethnic appearance, Biogeographic ancestry, Admixture **152**, 45

**19 Y-STRs**; Minimal haplotype loci, DYS388, DYS434, DYS435, DYS436, DYS437, DYS438, DYS439, DYS446, DYS449, DYS464, Gene diversity, Haplotype, Koreans **152**, 133